

Noble Energy

Weld County, CO (NAD 83)

Sec. 8-T4N-R65W

UPRC G07-99HZ

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

06 April, 2011

Well Coordinates: 1,362,284.37 N, 3,224,637.93 E (40° 19' 30.25" N, 104° 41' 39.52" W)

Ground Level: 4,691.00 ft

Local Coordinate Origin:

Centered on Well UPRC G07-99HZ

Viewing Datum:

KB @ 4707.00ft (Saxon 145)

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

Design Report for UPRC G07-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
868.00	1.03	36.53	867.95	6.27	4.64	-5.62	0.12
First MWD Survey							
960.00	0.86	30.44	959.94	7.53	5.49	-6.66	0.21
1,050.00	0.79	47.11	1,049.93	8.53	6.28	-7.61	0.28
1,144.00	0.17	255.83	1,143.93	8.94	6.62	-8.01	1.00
1,239.00	0.20	263.63	1,238.93	8.89	6.32	-7.71	0.04
1,333.00	0.18	295.48	1,332.93	8.93	6.02	-7.42	0.11
1,428.00	0.28	241.50	1,427.93	8.89	5.69	-7.08	0.24
1,523.00	0.22	232.05	1,522.93	8.66	5.34	-6.70	0.08
1,617.00	0.31	189.44	1,616.93	8.30	5.15	-6.46	0.22
1,712.00	0.39	258.61	1,711.92	7.98	4.79	-6.05	0.42
1,839.00	0.62	298.79	1,838.92	8.23	3.77	-5.08	0.32
1,934.00	0.85	304.96	1,933.91	8.88	2.74	-4.17	0.26
2,060.00	0.99	316.71	2,059.90	10.21	1.23	-2.90	0.19
2,216.00	1.35	317.59	2,215.86	12.55	-0.93	-1.16	0.23
2,339.00	2.31	273.73	2,338.80	13.78	-4.39	2.04	1.33
2,461.00	2.34	261.17	2,460.70	13.56	-9.30	6.93	0.42
2,584.00	3.61	263.64	2,583.54	12.74	-15.63	13.30	1.04
2,706.00	5.03	247.92	2,705.19	10.30	-24.40	22.36	1.51
2,829.00	6.01	250.95	2,827.62	6.18	-35.49	33.97	0.83
2,951.00	7.33	256.19	2,948.79	2.23	-49.08	48.04	1.19
3,074.00	9.59	251.95	3,070.45	-2.81	-66.45	66.00	1.90
3,197.00	11.31	254.08	3,191.40	-9.30	-87.79	88.12	1.43
3,319.00	10.65	261.61	3,311.17	-14.22	-110.45	111.28	1.29
3,442.00	9.42	254.00	3,432.30	-18.66	-131.37	132.64	1.47
3,564.00	11.09	251.75	3,552.34	-25.09	-152.11	154.16	1.41
3,687.00	12.86	254.45	3,672.66	-32.46	-176.53	179.47	1.51
3,809.00	12.75	265.68	3,791.65	-37.11	-203.04	206.39	2.04
3,932.00	14.77	266.22	3,911.11	-39.17	-232.22	235.50	1.65
4,055.00	13.56	265.73	4,030.37	-41.28	-262.25	265.46	0.99
4,177.00	14.25	264.09	4,148.79	-43.89	-291.45	294.69	0.65
4,299.00	13.31	263.32	4,267.28	-47.07	-320.33	323.70	0.79
4,422.00	13.93	261.48	4,386.82	-50.91	-349.04	352.65	0.61
4,544.00	13.85	261.74	4,505.25	-55.18	-378.01	381.93	0.08
4,667.00	11.90	259.45	4,625.16	-59.62	-405.05	409.33	1.64
4,789.00	10.85	257.84	4,744.76	-64.34	-428.64	433.38	0.90
4,912.00	10.07	256.75	4,865.71	-69.25	-450.43	455.67	0.65
5,035.00	9.92	257.17	4,986.85	-74.06	-471.22	476.98	0.14
5,157.00	7.60	257.79	5,107.42	-78.10	-489.36	495.53	1.90
5,280.00	6.01	246.53	5,229.55	-82.39	-503.21	509.91	1.68
5,402.00	4.35	243.85	5,351.05	-86.97	-513.23	520.54	1.37
5,525.00	2.65	226.39	5,473.82	-90.99	-519.47	527.37	1.62
5,647.00	0.25	317.36	5,595.77	-92.74	-521.70	529.85	2.19
5,770.00	0.40	18.80	5,718.77	-92.13	-521.74	529.79	0.29
5,892.00	0.40	307.82	5,840.77	-91.47	-521.94	529.88	0.38
6,015.00	0.60	26.87	5,963.77	-90.63	-521.99	529.79	0.53
6,137.00	0.20	70.63	6,085.76	-89.99	-521.50	529.20	0.39
6,219.00	0.48	55.52	6,167.76	-89.75	-521.08	528.75	0.36
6,260.00	0.33	38.28	6,208.76	-89.56	-520.86	528.50	0.47

Design Report for UPRC G07-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,301.00	2.34	264.36	6,249.75	-89.55	-521.62	529.25	6.29
6,341.00	5.63	278.30	6,289.65	-89.35	-524.38	531.94	8.51
6,382.00	8.68	274.76	6,330.33	-88.80	-529.45	536.85	7.51
6,423.00	11.37	275.06	6,370.70	-88.19	-536.56	543.76	6.56
6,464.00	14.87	271.28	6,410.62	-87.71	-545.85	552.84	8.78
6,505.00	17.17	266.34	6,450.03	-87.98	-557.15	564.03	6.52
6,546.00	19.59	258.35	6,488.94	-89.76	-569.93	576.92	8.51
6,587.00	22.44	256.01	6,527.21	-93.04	-584.26	591.60	7.24
6,627.00	25.84	257.38	6,563.71	-96.79	-600.18	607.92	8.61
6,668.00	28.22	259.10	6,600.23	-100.57	-618.42	626.53	6.11
6,709.00	29.77	257.10	6,636.09	-104.68	-637.86	646.39	4.46
6,750.00	31.07	256.29	6,671.44	-109.46	-658.06	667.10	3.32
6,769.00	32.13	259.00	6,687.62	-111.59	-667.78	677.04	9.33
6,810.00	33.88	257.66	6,722.01	-116.11	-689.65	699.36	4.62
6,851.00	38.08	257.33	6,755.18	-121.33	-713.16	723.41	10.25
6,892.00	42.44	256.70	6,786.46	-127.28	-738.97	749.85	10.68
6,932.00	47.64	256.74	6,814.71	-133.78	-766.51	778.08	13.00
6,973.00	52.75	257.02	6,840.95	-140.93	-797.18	809.51	12.47
7,014.00	58.00	258.12	6,864.24	-148.18	-830.11	843.19	12.99
7,055.00	63.19	261.23	6,884.37	-154.55	-865.24	878.89	14.28
7,096.00	65.51	262.80	6,902.11	-159.68	-901.84	915.83	6.63
7,137.00	68.36	263.22	6,918.18	-164.27	-939.28	953.51	7.01
7,178.00	72.11	263.35	6,932.04	-168.78	-977.59	992.04	9.15
7,219.00	77.00	262.19	6,942.95	-173.76	-1,016.78	1,031.52	12.23
7,259.00	81.61	260.86	6,950.38	-179.55	-1,055.64	1,070.80	11.98
7,300.00	85.62	259.47	6,954.93	-186.51	-1,095.78	1,111.54	10.34
7,329.00	86.57	259.35	6,956.91	-191.83	-1,124.22	1,140.47	3.30
7,397.00	89.54	257.15	6,959.22	-205.67	-1,190.75	1,208.36	5.43
7,429.00	91.73	258.63	6,958.86	-212.38	-1,222.03	1,240.33	8.26
7,492.00	92.09	259.12	6,956.76	-224.53	-1,283.81	1,303.27	0.96
7,555.00	91.57	259.44	6,954.75	-236.24	-1,345.68	1,366.22	0.97
7,618.00	88.78	261.35	6,954.56	-246.75	-1,407.79	1,429.21	5.37
7,681.00	91.08	261.11	6,954.64	-256.36	-1,470.05	1,492.20	3.67
7,745.00	89.72	261.44	6,954.19	-266.06	-1,533.30	1,556.19	2.19
7,808.00	88.40	262.73	6,955.22	-274.74	-1,595.69	1,619.16	2.93
7,871.00	86.49	262.93	6,958.03	-282.59	-1,658.13	1,682.04	3.05
7,934.00	88.73	261.90	6,960.66	-290.90	-1,720.52	1,744.94	3.91
7,997.00	87.87	259.91	6,962.53	-300.85	-1,782.70	1,807.91	3.44
8,060.00	87.93	259.09	6,964.84	-312.33	-1,844.60	1,870.86	1.30
8,123.00	90.71	259.29	6,965.58	-324.14	-1,906.47	1,933.83	4.42
8,186.00	92.84	259.87	6,963.63	-335.53	-1,968.40	1,996.79	3.50
8,248.00	91.26	260.23	6,961.41	-346.24	-2,029.43	2,058.75	2.61
8,312.00	90.65	261.61	6,960.35	-356.33	-2,092.62	2,122.73	2.36
8,375.00	91.30	262.36	6,959.28	-365.12	-2,154.99	2,185.70	1.58
8,439.00	89.66	262.89	6,958.74	-373.33	-2,218.46	2,249.65	2.69
8,502.00	90.03	262.35	6,958.91	-381.42	-2,280.93	2,312.61	1.04
8,565.00	87.88	261.33	6,960.06	-390.36	-2,343.28	2,375.57	3.78
8,629.00	86.72	261.14	6,963.07	-400.10	-2,406.46	2,439.49	1.84
8,692.00	86.60	261.44	6,966.74	-409.63	-2,468.63	2,502.38	0.51
8,756.00	83.95	262.03	6,972.02	-418.80	-2,531.74	2,566.14	4.24
8,819.00	86.55	263.49	6,977.23	-426.71	-2,594.02	2,628.87	4.73

Design Report for UPRC G07-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,883.00	87.65	264.91	6,980.47	-433.17	-2,657.61	2,692.65	2.80
8,946.00	88.27	263.20	6,982.71	-439.69	-2,720.23	2,755.48	2.89
9,010.00	91.42	261.60	6,982.89	-448.15	-2,783.66	2,819.43	5.52
9,073.00	93.24	260.74	6,980.32	-457.81	-2,845.85	2,882.37	3.19
9,137.00	91.02	260.09	6,977.95	-468.46	-2,908.91	2,946.33	3.61
9,200.00	89.32	257.49	6,977.76	-480.71	-2,970.70	3,009.29	4.93
9,264.00	92.26	258.76	6,976.88	-493.87	-3,033.32	3,073.22	5.00
9,327.00	90.93	259.70	6,975.12	-505.64	-3,095.18	3,136.18	2.58
9,391.00	90.43	259.65	6,974.36	-517.11	-3,158.14	3,200.17	0.79
9,454.00	88.31	260.52	6,975.06	-527.96	-3,220.19	3,263.16	3.64
9,518.00	88.12	260.93	6,977.05	-538.27	-3,283.33	3,327.13	0.71
9,581.00	86.76	260.74	6,979.86	-548.29	-3,345.46	3,390.06	2.18
9,645.00	88.10	260.43	6,982.73	-558.75	-3,408.53	3,454.00	2.15
9,708.00	89.75	261.90	6,983.92	-568.42	-3,470.77	3,516.98	3.51
9,772.00	89.85	260.98	6,984.14	-577.95	-3,534.05	3,580.97	1.45
9,835.00	90.46	260.49	6,983.97	-588.09	-3,596.23	3,643.97	1.24
9,899.00	91.79	260.98	6,982.71	-598.39	-3,659.38	3,707.95	2.21
9,962.00	91.66	259.70	6,980.82	-608.96	-3,721.46	3,770.92	2.04
10,026.00	92.13	259.31	6,978.70	-620.61	-3,784.36	3,834.88	0.95
10,089.00	89.97	259.16	6,977.54	-632.38	-3,846.23	3,897.85	3.44
10,153.00	90.25	259.61	6,977.42	-644.17	-3,909.14	3,961.84	0.83
10,216.00	87.04	259.28	6,978.91	-655.70	-3,971.05	4,024.80	5.12
10,280.00	86.76	259.53	6,982.37	-667.45	-4,033.86	4,088.70	0.59
10,344.00	88.89	260.30	6,984.80	-678.65	-4,096.82	4,152.64	3.54
10,407.00	89.66	260.10	6,985.60	-689.37	-4,158.90	4,215.64	1.26
10,471.00	90.80	260.02	6,985.34	-700.42	-4,221.94	4,279.63	1.79
10,534.00	88.61	259.62	6,985.67	-711.55	-4,283.94	4,342.62	3.53
10,598.00	88.25	260.36	6,987.42	-722.67	-4,346.94	4,406.60	1.29
10,661.00	87.90	260.22	6,989.54	-733.29	-4,409.00	4,469.56	0.60
10,725.00	87.41	260.05	6,992.15	-744.25	-4,472.00	4,533.51	0.81
10,788.00	87.96	260.15	6,994.70	-755.07	-4,534.02	4,596.45	0.89
10,852.00	87.59	259.65	6,997.18	-766.29	-4,596.98	4,660.40	0.97
10,915.00	87.74	260.37	6,999.75	-777.21	-4,658.97	4,723.35	1.17
10,979.00	88.52	260.24	7,001.84	-787.98	-4,722.02	4,787.31	1.24
11,042.00	88.00	259.79	7,003.75	-798.90	-4,784.04	4,850.28	1.09
11,106.00	88.24	259.61	7,005.85	-810.33	-4,846.97	4,914.24	0.47
11,169.00	88.89	259.66	7,007.43	-821.66	-4,908.92	4,977.21	1.03
11,233.00	89.17	259.74	7,008.51	-833.11	-4,971.88	5,041.20	0.46
11,296.00	89.78	260.64	7,009.09	-843.84	-5,033.96	5,104.20	1.73
11,360.00	90.25	260.78	7,009.07	-854.17	-5,097.12	5,168.19	0.77
11,423.00	90.28	259.99	7,008.78	-864.69	-5,159.23	5,231.19	1.25
11,487.00	90.61	259.88	7,008.28	-875.88	-5,222.25	5,295.19	0.54
11,550.00	90.89	259.73	7,007.46	-887.03	-5,284.25	5,358.18	0.50
11,582.00	91.05	259.39	7,006.92	-892.83	-5,315.71	5,390.17	1.17
Final MWD Survey							
11,634.00	91.05	259.39	7,005.97	-902.40	-5,366.81	5,442.15	0.00

Survey Projection to TD - Estimated BHL: 1058' FSL, 531' FWL

Design Report for UPRC G07-99HZ - MWD Survey

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
868.00	867.95	6.27	4.64	First MWD Survey
11,582.00	7,006.92	-892.83	-5,315.71	Final MWD Survey
11,634.00	7,005.97	-902.40	-5,366.81	Survey Projection to TD
11,634.00	7,005.97	-902.40	-5,366.81	Estimated BHL: 1058' FSL, 531' FWL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	UPRC G07-99HZ_ Rev0_BHL Tgt	260.47	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
868.00	11,634.00	Sperry MWD Surveys	MWD

Design Report for UPRC G07-99HZ - MWD Survey

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
UPRC	0.00	0.00	0.00	0.00	0.00	1,362,284.37	3,224,637.93	40° 19' 30.252 N	104° 41' 39.516 W
- actual wellpath hits target center									
- Polygon									
Point 1				-581.17	-1,993.95	1,360,290.50	3,224,056.78		
Point 2				-619.94	701.05	1,362,985.39	3,224,018.02		
Point 3				-654.70	3,393.06	1,365,677.28	3,223,983.26		
Point 4				2,046.30	3,413.82	1,365,698.04	3,226,684.14		
Point 5				4,619.30	3,433.60	1,365,717.82	3,229,257.04		
Point 6				4,663.07	767.59	1,363,051.93	3,229,300.80		
Point 7				4,707.83	-1,902.41	1,360,382.04	3,229,345.57		
Point 8				2,061.83	-1,949.18	1,360,335.27	3,226,699.67		
Point 9				-581.17	-1,993.95	1,360,290.50	3,224,056.78		
UPRC	0.00	0.00	0.00	0.00	0.00	1,362,284.37	3,224,637.93	40° 19' 30.252 N	104° 41' 39.516 W
- actual wellpath hits target center									
- Polygon									
Point 1				-581.17	-1,993.95	1,360,290.50	3,224,056.78		
Point 2				-3,225.17	-1,974.72	1,360,309.73	3,221,412.90		
Point 3				-5,889.17	-1,957.49	1,360,326.96	3,218,749.01		
Point 4				-5,911.94	683.52	1,362,967.85	3,218,726.24		
Point 5				-5,929.71	3,324.52	1,365,608.74	3,218,708.47		
Point 6				-3,308.71	3,358.29	1,365,642.51	3,221,329.37		
Point 7				-654.70	3,394.06	1,365,678.28	3,223,983.26		
Point 8				-619.94	701.05	1,362,985.39	3,224,018.02		
Point 9				-581.17	-1,993.95	1,360,290.50	3,224,056.78		
UPRC	0.00	0.00	0.00	0.00	0.00	1,362,284.37	3,224,637.93	40° 19' 30.252 N	104° 41' 39.516 W
- actual wellpath hits target center									
- Polygon									
Point 1				-1,041.13	-1,533.91	1,360,750.52	3,223,596.84		
Point 2				-3,225.13	-1,514.72	1,360,769.71	3,221,412.94		
Point 3				-5,429.13	-1,497.53	1,360,786.90	3,219,209.03		
Point 4				-5,451.94	683.48	1,362,967.81	3,219,186.22		
Point 5				-5,469.75	2,864.48	1,365,148.72	3,219,168.41		
Point 6				-3,308.75	2,898.29	1,365,182.53	3,221,329.32		
Point 7				-1,114.74	2,933.10	1,365,217.34	3,223,523.24		
Point 8				-1,079.94	701.09	1,362,985.43	3,223,558.04		
Point 9				-1,041.13	-1,533.91	1,360,750.52	3,223,596.84		
UPRC	0.00	0.00	6,972.00	-900.65	-5,362.49	1,361,383.75	3,219,275.67	40° 19' 21.828 N	104° 42' 48.852 W
- actual wellpath misses target center by 34.06ft at 11630.05ft MD (7006.04 TVD, -901.67 N, -5362.93 E)									
- Point									

North Reference Sheet for Sec. 8-T4N-R65W - UPRC G07-99HZ

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to KB @ 4707.00ft (Saxon 145). Northing and Easting are relative to UPRC G07-99HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 40° 47' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995769

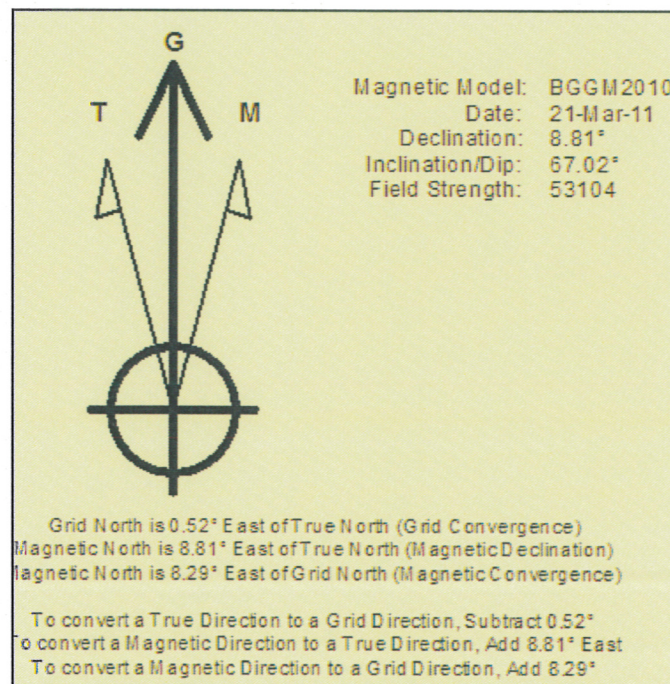
Grid Coordinates of Well: 1,362,284.37 ft N, 3,224,637.93 ft E

Geographical Coordinates of Well: 40° 19' 30.25" N, 104° 41' 39.52" W

Grid Convergence at Surface is: 0.52°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,634.00ft
the Bottom Hole Displacement is 5,442.15ft in the Direction of 260.46° (Grid).

Magnetic Convergence at surface is: -8.29° (21 March 2011, , BGGM2010)





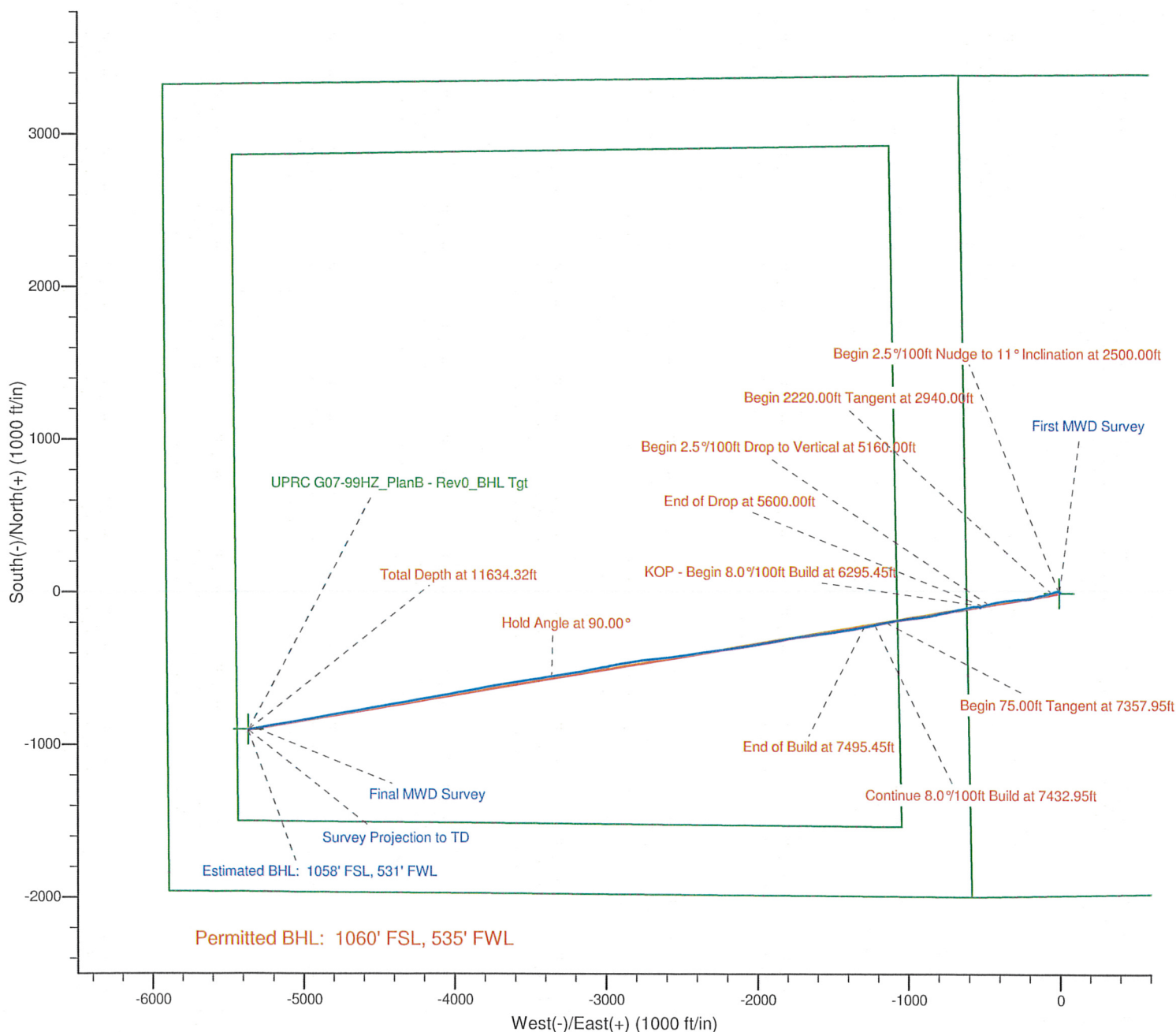
Azimuths to Grid North
 True North: -0.52°
 Magnetic North: 8.29°

Magnetic Field
 Strength: 53103.8snT
 Dip Angle: 67.02°
 Date: 3/21/2011
 Model: BGGM2010

LEGEND

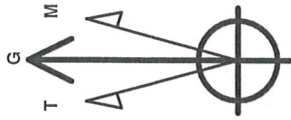
- UPRC G07-99HZ,
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the UPRC G07-99HZ well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.



Noble Energy

Project: Weld County, CO (NAD 83)
Site: Sec. 8-T4N-R65W
Well: UPRC G07-99HZ



Azimuths to Grid North
True North: -0.52°
Magnetic North: 8.29°
Magnetic Field
Strength: 53103.8nT
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LEGEND

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